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ABSTRACT

This paper integrates principles of Total Quality Management (TQM) with those of investment for institutions of higher education. TQM with investment budgeting as one of its critical tools is seen to be essential for effective management in a time of decreasing financial resources. A process for investment budgeting is outlined and explained including: the importance of the investment decision as an aid to TQM, establishment of investment policy, development of an investment plan, the investment program, investment proposals, classification of various investment proposals (into independent projects, mutually exclusive projects, and prerequisite projects) in the context of TQM, and collection of relevant information. These steps are followed by evaluation of proposals, selection of the best investment proposal, and investment, revision and control. (Contains 14 references.) (DB)

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INVESTMENT BUDGETING AS A TOOL FOR QUALITY MANAGEMENT IN THE SCHOOL

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Jean Endo
Editor
AIR Forum Publications

ABSTRACT

INVESTMENT BUDGETING AS A TOOL FOR QUALITY MANAGEMENT IN THE SCHOOL

It is axiomatically accepted that education is required to keep on doing more and more with less and less by way of financial means. This makes TQM essential since finance is fundamental to quality management, and the quality of outputs is determined by the quality of inputs. The school should exercise great care in order to make the best possible use of scarce financial resources. In this regard, it may prove worth while to consider the TQM concept that seems to offer an effective approach in commerce and industry. Within the TQM framework an investment budget is of the utmost importance. As in the case of the business world, such an investment budget for a school should be preceded by an investment policy, an investment plan and an investment programme. An investment programme comprises the original proposal and its classification, the collection of all relevant information, the analysis and financial evaluation of all proposals, the selection of the best investment proposal and its implementation. Subsequently it requires control and post-calculation in order to ensure that the direction planned is adhered to in terms of the TQM programme.

INVESTMENT BUDGETING AS A TOOL FOR QUALITY MANAGEMENT IN THE SCHOOL

1. INTRODUCTION

It is axiomatically accepted that education is required to keep on doing more and more with less and less by way of financial means. This makes Total Quality Management (TQM) essential since finance is fundamental to quality management, and the quality of outputs is determined by the quality of inputs (cf. Lewis & Smith, 1994:11). This prompts the school to exercise great care when taking an investment decision, i.e. the decision on how funds are to be applied within the school so that optimum use can be made of scarce resources. Through the investment decision it can be determined, inter alia, which facilities, amenities and equipment to provide. When resources are allocated to a particular project, those resources are precluded from other possible uses.

Investing in a business undertaking brings benefits, particularly in terms of turnover and cost savings and consequently increased income. In schools these advantages often manifest themselves in the improved educational value of the teaching and therefore better service to the community.

Investment budgeting as a tool for TQM involves the allocation of resources in the hope of reaping the desired benefit after a reasonable length of time. The investment decision involves choosing from the various investment possibilities available and planning for expenditure on products with a lifespan of at least,

but usually more than, one year.

This decision relates to:

- the asset structure of the organisation i.e. the composition of the fixed and floating assets,
- the time when the asset is to be acquired, and
- the period for which the asset is to be retained (De Klerk & Van Zyl, 1989:613; Du Plessis & Bloom, 1996:317).

2. THE IMPORTANCE OF THE INVESTMENT DECISION AS AN AID TO TQM

The investment decision determines how schools can be equipped and what facilities the school has at its disposal. This decision plays an important role in the direction in which the school and its image are to develop. Both are factors influencing the school's future ability to attract funding.

Investment in buildings and equipment is long term and to a large extent irrevocable (Stoner, 1978:603). Decisions in favour of capital expenditure are not easily reversed as the capital cannot be easily recovered, nor the equipment put to some other use. Once funds have been used for the acquisition of assets, schools are committed for quite some time to the capacity and efficiency of these assets.

3. INVESTMENT BUDGETING AS A TOOL TO TQM

Investment budgeting should be preceded by a decision regarding the investment policy, the investment plan and the investment programme (Scheurkogel and Mostert, 1990:316).

3.1 Investment policy

The investment policy is a predetermined guide to decision-making within the framework of TQM with regard to the school's need for capital and the application of these decisions with the object of realising the school's objective, viz educational teaching. The investment policy or strategy contains the formal criteria that should be applied in the search for and evaluation of investment possibilities (Bierman and Smidt, 1984:3).

3.2 The investment plan

The investment plan consists of a number of smaller plans which have the short-term and long-term aims of the school as points of departure. This plan is a provisional inventory of motivated alternative investment possibilities from which a choice can be made with a view to achieving the school's aims.

The investment plan can include projects over the longer term. By creating a framework of future investments timeous provision is made for additional capacity and capital needs (Lambrechts and Schoonwinkel, 1989:81). The duration of the planning period will vary in accordance with the ability to gauge the future demand for the school's services to the community as well as the nature of the investment involved.

3.3 The investment programme

The investment policy and the investment plan are followed by the investment programme which includes the following steps:

- the original proposal and its classification
- the collection of all the relevant information

- the analysis and financial evaluation of all the proposals
- the selection of the best investment proposal, and
- the investment act (implementation), if any, and follow up, ie the control and post-calculation of the investment project (Lambrechts, 1989:3; Du Plessis & Bloom, 1996:321).

3.3.1 The original proposal and its classification

3.3.1.1 The original proposal

Consideration should be given to the design of procedures required for the submission of proposals pertaining to useful investment. Should the school's investment plan be compiled without any attempt at finding and considering all the alternatives, many an erroneous decision might usurp the place of correct ones (Scheurkogel and Mostert, 1990:316). In the interests of TQM there could be a need for projects which make provision for the continued growth of the school or which ensure that the school remains competitive.

Proposals may be made by any professional or administrative staff member or by any pupil in the school or any member of the governing body of the school, any member of the parent body, or any person or institution from the community at large. The headmaster should encourage everyone to submit investment proposals, even though the suggestions may appear unrealistic in relation to funds. The more proposals considered, the easier it becomes to make effective decisions that are in the best interests of the school in the pursuit of its goals.

3.3.1.2 The classification of investment proposals

The reasons for the classification of investment proposals reside chiefly in the differences in the method and accuracy of evaluation of various investment projects, the subjective evaluation of some projects, and certain strategic investments which for certain reasons cannot be financially evaluated and should enjoy preference in one way or the other.

The classification of the investment proposals can ensure that, from a TQM and an organizational point of view, they are analysed by people competent to do so, while it also facilitates the processing of such proposals for budgetary purposes (Bierman and Smidt, 1984:83-84).

Investment projects can be classified into three basic categories insofar as they have an influence on the investment decision:

- independent projects, the acceptance or rejection of which does not preclude other projects from evaluation,
- mutually exclusive projects, the acceptance of one precluding the acceptance of one alternative or more, and
- prerequisite projects, the acceptance of one depending on another project or more (Van Horne, 1983:112).

Independent alternatives show that different assets are required for different tasks. Mutually exclusive projects indicate various methods for carrying out the same task. Prerequisite projects can indicate that the same equipment can serve fully or partially in support of other tasks.

Should the decision in favour of a second investment proposal increase the net benefit of a first investment, the second investment is complementary to the first. If the second proposal has a negative effect on the benefit of the first proposal, the second proposal is interchangeable with the first. (Lambrechts and Schoonwinkel, 1989:87). An investment proposal for the purchase of an overhead projector can be followed by a second proposal for the purchase of an LCD. The usefulness of the overhead projector thereby increases. In this case the second proposal is complementary to the first. A proposal to purchase a personal computer along with a word processing program will replace the proposal to buy a typewriter as the purchase of a computer impacts negatively on the usefulness of the typewriter. The different degrees of interdependence of investment proposals may be represented as follows:

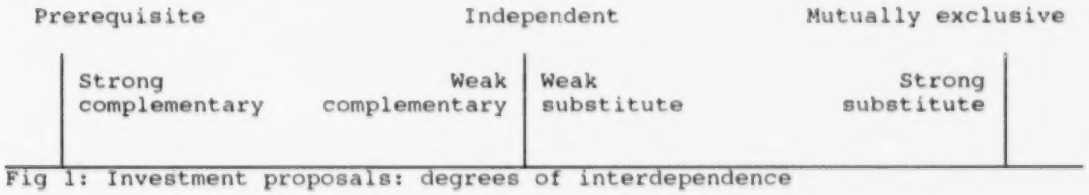

Fig 1: Investment proposals: degrees of interdependence

In the interest of TQM a distinction can be made between tactical and strategic investments (Scheurkogel and Mostert, 1990:315). A tactical investment usually involves a relatively small amount, and in most cases corresponds to past investments, for example the extension of a facility to increase its capacity, the replacement of a certain item of equipment or the purchase of some cost-saving apparatus. Strategic investment on the other hand involves relatively large amounts and can differ from past investments. The expected benefits from strategic investment are

long-term and spread over many sections of the school; such investment has to do with the long-term objectives of the school. For instance, the income generated by projects calling for the establishment and development of regular cultural activities can be of long-term and general benefit to the school.

Capital investment projects can be classified as ones generated by growth potential and those generated to comply with legal, safety and health requirements (Moyer et al., 1987: 283-284).

Investment proposals or projects can be classified according to capital requirements, their urgency, the nature and extent of the expected cost and benefit, functional considerations, the influence of existing investments and other similar considerations.

Assets are subject to wear and tear as well as obsolescence and should from time to time be replaced in the interests of continuity. The extension of existing facilities also has possible advantages in that the extended or updated facility is relatively familiar. The availability of new areas of study and of new services to the community can benefit the community in the long-term. Some projects proposed can be aimed at improving teaching while others may result in savings.

The nature and extent of the investment proposals will vary from school to school. Each school should therefore create its own classification system to suit its activities.

3.3.2 Collecting relevant information

In making an investment decision there are certain unknown factors; for this reason the school may have to rely heavily on estimates. This procedure, however, does not eliminate the necessity for decisions to be based on reliable information. In the entire investment process, the reliability of the information pertaining to the expected benefits and cost of a proposed investment is vital. Therefore, it is imperative that the headmaster identify and appoint informed staff members to assist with the collection and accuracy control of information before the proposal is submitted for evaluation and consideration.

Investment models should be submitted in a specific format so that all relevant information is comparable and immediately available. Such models facilitate evaluation of the proposed project and provide a basis for comparison that will better equip the management team to choose between alternative proposals.

3.3.3 The analysis and financial evaluation of proposals

Once the investment proposals have been submitted and all relevant information pertaining to them has been gathered, they should be scrutinized with a view to financial analysis and evaluation within the framework of TQM.

From a cashflow point of view, the projection of expected changes in the cash inflow and outflow arising out of the proposal is very important for the evaluation of an investment proposal. The following variables are likely:

- the original investment amount as well as subsequent

amounts required by the project;

- the expected cash benefits arising from the investment;
- the time factors having a bearing on the cashflow concerned;
- the expected economic life of the investment project;
- the residual value or cash to be realised after the economic life of the investment and the critical profitability (Lamprechts and Schoonwinkel, 1989:89)

These basic components of an investment proposal can be schematically represented as follows (Hunt *et al*, 1971:151):

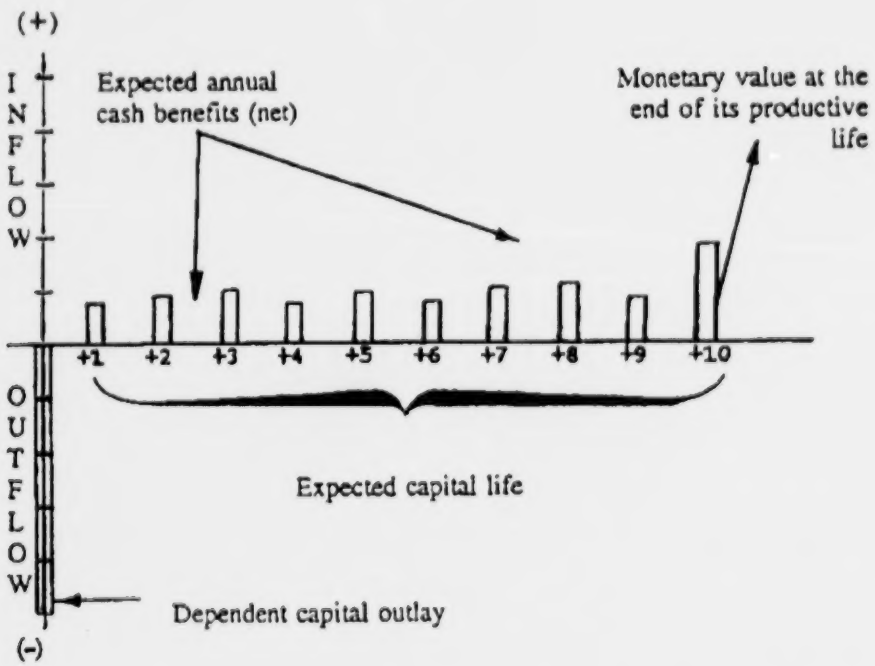

Fig 3: Basic components of an investment analysis

This type of analysis can obviously only be done in terms of investment proposals which translate into cash benefits for the

school. A similar analysis for cash savings arising out of an investment could also be done. Should an investment proposal have to be considered purely on educational grounds for academic purposes, it would not be possible to implement such analysis meaningfully and hence factors other than financial ones would have to be taken into account. The principle of rendering the best service at the lowest possible cost should also be applied within the context of the investment decision in schools.

A number of methods for the evaluation of investment projects are open to a business enterprise, for example those based on traditional values which do not make provision for time value and those based on a modern selection criteria which do make such provision (Lamprechts and Scheurkogel, 1989: 113-183). Because of the disadvantages such as subjectivity and the disregard of the time value of money attaching to the former, only the pay-back period method will be discussed here to illustrate one way of evaluating investment projects in terms of TQM.

The pay-back period method involves the calculation of the projected number of years before the net cash outflow can be recovered. The full life span of the investment is disregarded. In the case of a constant annual net cash inflow the pay-back period is calculated by dividing the investment amount by the net cash inflow. If the net cash inflow is not constant, the annual net cash inflow accumulates until it is just under the investment amount. The portion applicable to the following year is then added to calculate the pay-back period. The pay-back period of the investment proposal is then compared to an acceptance

criterion as per the directive. However, should the pay-back period exceed the acceptance criterion, the proposal is rejected and *vice versa*. One of the major objections against this method is that it disregards the benefits realised after expiry of the pay-back period. This method can only be used in a school situation where an investment is proposed with a view to generating income.

Modern selection criteria taking the time value of money into account reckon with the period of receipt of investments as well as the period of the investment project *per se*. The time value of money is a function of time and interest. Present value is determined by multiplying the advance amount by the opposite of the compounded interest factor. In this way, future sums of money are discounted at present value. The three most important discounting methods allowing for the time value of money are the internal rate of return, the net present value and the annuity methods (Scheurkogel and Mostert, 1990:330-352; Lambrechts and Scheurkogel, 1989(b):134-161; Du Plessis & Bloom, 1996: 323-326).

The internal rate of return method involves calculation of the discount rate at which the sum of the present value of the expected investment equals to the sum of the present value of the net cash inflow. Internal rate of return is the interest that can be earned from an investment within the school. Should the interest yielded be higher than or equal to that in the case of critical rate of return, the investment should be made. The critical rate of return is the interest which can be earned outside of the school on a risk-free investment.

The net present value of a project involves the difference between the sum of the present values of the expected net cash inflow and the investments, calculated over the life of the project. The net present value of a project is determined by discounting the cash inflow over its lifespan to ascertain whether or not the latter exceeds the original investment. If the net present value is negative, it means that the required minimum profitability has not been achieved and that the project will be unacceptable. If the net present value is positive, in other words if the sum of the present value of the net cash inflow is greater than the sum of the present value of the investment amount, the proposal is acceptable.

The equivalent uniform annual cost method (the annuity method) takes into account the fact that there are two different cost types involved in an investment project, viz the interest on the invested capital and the recovery of the capital over the life span of the project. This method is used particularly for projects that do not generate any cash inflow. It is therefore eminently suitable for schools. By calculating the equivalent uniform annual cost of a number of mutually exclusive projects the least expensive project for the purpose in question can be determined. In effect this evaluation method focuses on the cost aspect of investment projects. A small income (for example, residual value) is usually completely eclipsed by the extent of the cash outflow.

3.3.4 Selection of the best investment proposal

Once the investment proposal has been analysed and evaluated in

comparative terms, the projects which have been approved and are to be implemented should be selected.

Decisions on investment proposals can be based on quantitative or qualitative considerations. It is not always possible to express benefits from investment decisions in quantitative terms as educational and other human factors have to be taken into account. As far as qualitative considerations are concerned, the investment alternatives can be placed in order of priority by objective evaluation. Prioritising should be done with great care as it can give rise to dissatisfaction amongst staff and other interested parties causing disputes over priorities.

In the selection of investment projects to be implemented, expenses which might prejudice future school funds should be carefully scrutinized as the school may be in a position to make the initial investment, but not to afford the further outlay that the investment may require in the future.

3.3.5 Investment, revision and control

For the purposes of an effective TQM programme, the act of investing involves the implementation of the investment proposals which have been accepted for inclusion in the school's capital budget. The funds obtained by virtue of the financing decision should be available when required for investment.

Even once a project has been accepted and included in the long-term planning and the capital budget it should remain subject to reconsideration in view of new insights and knowledge. Changing

circumstances could mean that it would be to the school's advantage to adapt its investment programme; change could also lead to interin consideration being given to the redistribution of funds within the approved programme.

Once the investment proposals have been implemented, it is necessary to exercise control. This involves a comparison of the real results with the planned results and is relevant *inter alia* to cost and investment demands. Should any variances become evident, the necessary correction and adjustment should take place.

The frequency of control and post-calculation will vary depending on the nature, extent and risks involved in a project and the ease of control (Lambrechts, 1989:5). By comparing the real progress with the planned progress of approved investment projects, a reliable insight may be gained into the accuracy of the estimates. Feedback procedures on the project should be included in the control mechanism pertaining to the investment decision. In this way the school can broaden its experience and gain valuable experience regarding future investments. To facilitate control of the process of putting into practice investment proposals, the school's accounting system should be designed in such a way that information is readily available and comparable with the estimates. By means of such a system information can then be submitted in the required format.

4. Summary

The school should exercise great care in order to make the best possible use of scarce financial resources. In this regard, it may prove worth while to consider the TQM concept that seems to offer an effective approach in commerce and industry. Within the TQM framework an investment budget is of the utmost importance. As in the case of the business world, such an investment budget for a school should be preceded by an investment policy, an investment plan and an investment programme. An investment programme comprises the original proposal and its classification, the collection of all relevant information, the analysis and financial evaluation of all proposals, the selection of the best investment proposal and its implementation. Subsequently it requires control and post-calculation in order to ensure that the direction planned is adhered to in terms of the TQM programme.

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